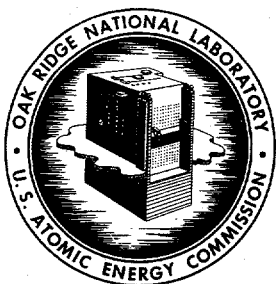


*posted
mbs*

1448



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ORNL
CENTRAL FILES NUMBER

62-2-79

DATE: February 27, 1962
SUBJECT: Radioactivity in Clinch River Water

TO: A. F. Becher
FROM: K. Z. Morgan

COPY NO. 1.

This document has been approved for release
to the public by:

Daniel R. Hamrick 4/21/95
Technical Information Officer Date
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Physics and Health
Physics
March 1962
11:04:16

A. F. Becher
UCNC
ORGDP

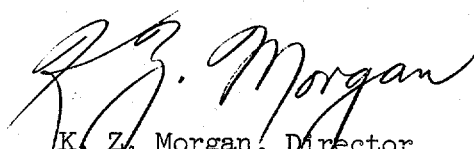
February 27, 1962

Health Physics Division

W. H. Jordan
F. R. Bruce
W. S. Snyder
J. C. Hart
D. M. Davis
E. D. Gupton
J. A. Cox
W. D. Cottrell
Laboratory Records

Radioactivity in Clinch
River Water

Enclosed, Table I, are the results of analysis of the weekly composite Clinch River samples which were collected at the ORGDP water filtration plant intake, by ORGDP personnel, for ORNL. $(MPC)_w$ values for the mixture have been calculated and are included in this table. Also enclosed, Tables II and III respectively, are the dilution factors in the Clinch River during the period 1/1/62 - 1/28/1962 and the radio-chemical analysis of White Oak Lake effluent, January 1962.


K. Z. Morgan, Director
Health Physics Division

KZM:JCH:dw

Enclosures

February 27, 1962

To: D. M. Davis
J. C. Hart

From: Environmental Monitoring Groups

Subject: Radioactivity in Clinch River Water

The attached tables list the Radioactivity in the Clinch River at ORGDP Filtration Plant, the Weekly Dilution Factors in the Clinch River, and the Radiochemical Analysis Data for White Oak Lake Effluent for the month of January. The average activity level in the river was not significantly different from that of last month. A total of 254 curies of radioactivity were discharged over White Oak Dam during this period.

W. D. Cottrell
W. D. Cottrell

WDC:dw

Attachments

cc: H. H. Abee
E. D. Gupton

TABLE I
RADIOACTIVITY IN THE CLINCH RIVER AT ORGDP FILTRATION PLANT
January, 1962

Sample No.	Week Ending	Gross Beta c/ml ^a	Gross Alpha c/ml ^b	Sr ⁹⁰ Beta 10 ⁻⁸ µc/cc	Ru ¹⁰⁶ Beta 10 ⁻⁶ µc/cc	(MPC) _w ^c 10 ⁻⁶ µc/cc	% (MPC) _w
G-93	1-8-62	0.19 ± 0.008	0.01	0.90 ± 0.18	0.62 ± 0.013	3.84	15.3
G-94	1-15-62	0.06 ± 0.005	0.01	0.90 ± 0.14	0.20 ± 0.007	1.73	10.7
G-95	1-22-62	0.20 ± 0.01	0.01	0.90 ± 0.14	0.72 ± 0.011	3.80	16.2
G-96	1-29-62	0.17 ± 0.005	0.01	1.08 ± 0.14	0.61 ± 0.013	3.11	16.8

a Gross beta counted at 14.6% geometry based on Ru¹⁰⁶ as a standard.

b Gross alpha counted at 52% geometry.

c Maximum permissible concentration for populations in the neighborhood of a controlled area.

TABLE II

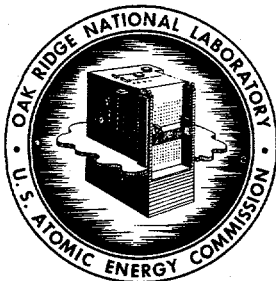
Dilution Factor in the Clinch River During
the Period 1/1/62 - 1/28/62

<u>Week Ending</u>	<u>Weekly Average</u>
1-7-62	254
1-14-62	556
1-21-62	191
1-28-62	175

TABLE III

Radiochemical Analyses of White Oak Lake Effluent
January 1962

<u>Isotope</u>	<u>% of Total</u>
Ru ¹⁰⁶	92.23 —
Zr ⁹⁵	1.1
Tre-Ce	0.94
Cs ¹³⁷	0.71
I ¹³¹	0.01
Ce ¹⁴⁴	0.03
Nb ⁹⁵	3.68
Ba ¹⁴⁰	0.03
Co ⁶⁰	0.28
Sr ⁸⁹	0.10
Sr ⁹⁰	0.85 —
Gross Beta 123 d/m/ml	
Beta Identified 143 d/m/ml	



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CENTRAL FILES NUMBER

62-3-91

DATE: March 27, 1962

COPY NO. 1

SUBJECT: Radioactivity in Clinch River Water

TO: A. F. Becher

FROM: K. Z. Morgan

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HEALTH PHYSICS DIVISION

RADIOACTIVITY IN CLINCH RIVER WATER

February 1962

Enclosed, Table I, are the results of analysis of the weekly composite Clinch River samples which were collected at the ORGDP water filtration plant intake, by ORGDP personnel, for ORNL. $(MPC)_w$ values for the mixture have been calculated and are included in this table. Also enclosed, Tables II and III respectively, are the dilution factors in the Clinch River during the period 1/28/62 - 2/25/62 and the radiochemical analysis of White Oak Lake effluent, February, 1962. The per cent of maximum permissible concentration in the river was not significantly different from last month. A total of 217 curies of radioactivity was discharged over White Oak Dam during this period.

TABLE I
RADIOACTIVITY IN THE CLINCH RIVER AT ORGDP FILTRATION PLANT
February, 1962

Sample No.	Week Ending	Gross Beta c/m/ml ^a	Gross Alpha c/m/ml ^b	Sr Beta 10 ⁻⁸ μ c/cc	Ru Beta 10 ⁻⁶ μ c/cc	(MPC) _w ^c 10 ⁻⁶ μ c/cc	% (MPC) _w
G-97	2-5-62	0.04 \pm 0.005	0.01	0.95 \pm 0.13	0.14 \pm 0.004	1.30	10.4
G-98	2-12-62	0.07 \pm 0.004	0.01	0.90 \pm 0.14	0.22 \pm 0.005	1.96	11.0
G-99	2-19-62	0.06 \pm 0.006	0.01	0.90 \pm 0.14	0.15 \pm 0.005	1.67	10.2
G-100	2-26-62	0.15 \pm 0.006	0.01	1.17 \pm 0.22	0.48 \pm 0.009	2.86	16.5

^a Gross beta counted at 14.6% geometry based on Ru¹⁰⁶ as a standard.

^b Gross alpha counted at 52% geometry.

^c Maximum permissible concentration for populations in the neighborhood of a controlled area.

TABLE II

Dilution Factor in the Clinch River During
the Period 1/28/62 - 2/25/62

<u>Week Ending</u>	<u>Weekly Average</u>
2-4-62	671
2-11-62	752
2-18-62	680
2-25-62	121

4 2224
556

TABLE III

Radiochemical Analyses of White Oak Lake Effluent
February, 1962

<u>Isotope</u>	<u>% of Total</u>
Ru ¹⁰⁶	89.28
Zr ⁹⁵	0.29
Tre-Ce	1.05
Cs ¹³⁷	0.77
I ¹³¹	0.05
Ce ¹⁴⁴	0.12
Nb ⁹⁵	2.03
Ba ¹⁴⁰	0.02
Co ⁶⁰	5.07
Sr ⁸⁹	0.14
Sr ⁹⁰	1.17

Gross Beta 123 d/m/ml

TABLE I

RADIOACTIVITY IN THE CLINCH RIVER AT ORGDP FILTRATION PLANT

February, 1962

ORGDP Sample No.	Week Ending	Gross Beta c/m/mla	Gross Alpha c/m/mlb	Sr Beta 10 ⁻⁸ µc/cc	Ru Beta 10 ⁻⁶ µc/cc	(MPC) ^c 10 ⁻⁶ µc/cc	% (MPC) ^d
4.5 x 10 ⁻⁸ G-97	2-5-62	0.04 ± 0.005 <i>12.2 x 10⁻⁵ µc/cc</i>	0.01	0.95 ± 0.13	0.14 ± 0.004	1.30	10.4
0 x 10 ⁻⁸ G-98	2-12-62	0.07 ± 0.004 <i>21.0 x 10⁻⁵ µc/cc</i>	0.01	0.54 ± 0.14	0.22 ± 0.005	1.96	11.0
5 x 10 ⁻⁸ G-99	2-19-62	0.06 ± 0.006 <i>16.5 x 10⁻⁵ µc/cc</i>	0.01	0.54 ± 0.14	0.15 ± 0.005	1.67	10.2
1.7 x 10 ⁻⁸ G-100	2-26-62	0.15 ± 0.006 <i>45.9 x 10⁻⁵ µc/cc</i>	0.01	0.86 ± 0.22	0.48 ± 0.009	2.86	16.5

a Gross beta counted at 14.5% geometry based on Ru¹⁰⁶ as a standard.

b Gross alpha counted at 52% geometry.

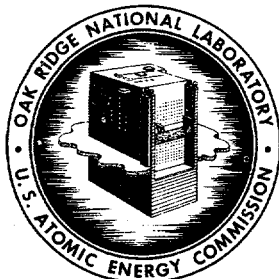
c Maximum permissible concentration for populations in the neighborhood of a controlled area.

Total Beta

ORGDP = 1.42 x ORNL

ORGDP = 73% ORNL

(1 liter sample)



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CENTRAL FILES NUMBER

62-4-68

DATE: April 27, 1962

COPY NO. /

SUBJECT: Radioactivity in Clinch River Water

TO: A. F. Becher

FROM: K. Z. Morgan

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1962 JUN 20 PM 1:10

SAFETY and Health
PHYSICS

To: D. M. Davis
J. C. Hart

From: Environmental Monitoring Group

Subject: Radioactivity in Clinch River Water

Enclosed, Table I, are the results of analysis of the weekly composite Clinch River samples which were collected at the ORGDP water filtration plant intake, by ORGDP personnel, for ORNL. $(MPC)_w$ values for the mixture have been calculated and are included in this table. Also enclosed, Tables II and III respectively, are the dilution factors in the Clinch River during the period 2/25/62 - 4/1/62 and the radiochemical analysis of White Oak Lake effluent, March 1962. The per cent of maximum permissible concentration in the river reached a value of 27% during the week ending 4/1/62. This was a result of zero discharge of water from Norris Dam during six days of this week. A total of 261 curies of radioactivity was discharged over White Oak Dam during the month of March.

W. D. Cottrell
W. D. Cottrell

WDC:dw

Attachments

TABLE I
RADIOACTIVITY IN THE CLINCH RIVER AT ORGDP FILTRATION PLANT
March, 1962

Sample No.	Week Ending	Gross Beta c/m/ml ^a	Gross Alpha c/m/ml ^b	Sr Beta 10 ⁻⁸ μ c/cc	Ru Beta 10 ⁻⁶ μ c/cc	(MPC) _w ^c 10 ⁻⁶ μ c/cc	% (MPC) _w
G-101	3-4-62	0.096 \pm 0.005	0.019	1.04 \pm 0.14	0.29 \pm 0.009	2.28	13.0
G-102	3-11-62	0.05 \pm 0.004	0.019	0.81 \pm 0.14	0.14 \pm 0.004	1.66	9.3
G-103	3-18-62	0.03 \pm 0.003	0.019	0.90 \pm 0.14	0.08 \pm 0.005	1.02	9.0
G-104	3-25-62	0.05 \pm 0.004	0.019	1.35 \pm 0.14	0.14 \pm 0.004	1.07	14.4
G-105	4-1-62	0.27 \pm 0.008	0.019	1.85 \pm 0.13	0.86 \pm 0.015	3.05	27.3

^a Gross beta counted at 14.6% geometry based on Ru¹⁰⁶ as a standard.

^b Gross alpha counted at 52% geometry.

^c Maximum permissible concentration for populations in the neighborhood of a controlled area.

TABLE II

Dilution Factor in the Clinch River During
the Period 2/25/62 - 4/1/62

<u>Week Ending</u>	<u>Weekly Average</u>
3-4-62	220
3-11-62	671
3-18-62	1020
3-25-62	467
4-1-62	97

572475
495

TABLE III

Radiochemical Analyses of White Oak Lake Effluent
March, 1962

<u>Isotope</u>	<u>% of Total</u>
Ru ¹⁰⁶	96.94
Zr ⁹⁵	0.22
Tre-Ce	0.57
Cs ¹³⁷	0.30
I ¹³¹	0.02
Ce ¹⁴⁴	0.14
Nb ⁹⁵	0.45
Ba ¹⁴⁰	0.02
Co ⁶⁰	0.76
Sr ⁸⁹	0.08
Sr ⁹⁰	0.49

Gross Beta 158 d/m/ml